Name: _____

The Best Time to Plant a Tree

Focus Questions

1. How fast does your tree grow?
2. How would a tree of this species change after 7 generations?

Vocabulary

Continuous variable	Tree Core	Growth Ring
Data point	Climatic	scatter plot
Seventh Generation Principle	***trend***	Haudenosaunee

What is a Tree Core?

Many trees in Canada make one **growth ring** each year, with the newest ring next to the bark. Through a tree's life, a year-by-year ring pattern is formed which reflects the **climatic** conditions in which the tree grew. Lots of water and a long growing season result in a wide ring. A **drought** year may result in a very narrow one.

One way of looking at these **growth rings** is by cutting down the tree. Another method is by using a **tree core:** a thin round piece of wood from trunk of a tree that shows these **growth rings.**

The growth rings of a tree. Each ring represents one year; the outside rings, near the bark, are the youngest.

[Taken with modifications from *Wikipedia.com*]

Name: _____

Step 1: Collecting Your Data

We will find some measurements from our tree core that will help us answer our focus questions. You will find three **continuous variables** (that is, measurements) for each ring on your tree core. That means each ring will represent a new **data point.**

For each ring, find:

1. **Age:**
   To find the age of your tree for a certain ring, count how many rings there are from that ring to the center of the core.

2. **Width of Tree:**
   To find the width of a tree for a certain ring, measure with a ruler from the center of the center of the core to that ring.

Age: 11
Width: 15.2 cm
Area: 725.8 cm^2

3. **Area of Cross-section:**
   To find the area of a cross-section at a certain ring, use the width as your radius, and the equation for a circle, $A = \pi r^2$.
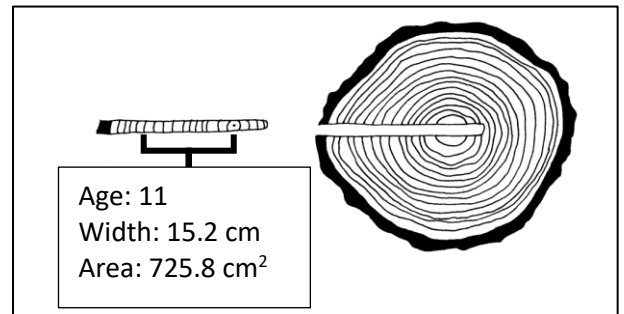
Collect your data on the following chart. You will need one chart per group.

| Column 1: Age of Tree	Column 2: Width of Tree	Column 3: Area of Trunk cross-section
1		
2		
3		
4		
5		
6		
7		
8		
9		

| 10		

Step 2: Finding a Pattern

Finding patterns in our tree growth will help us answer our focus questions.

1. Graph your data using a ***scatter plot,*** on the graph paper below. Make one scatter plot for your width, and one for cross section area.
2. Are there any years where the growth is very different? Why might that be?
3. Draw a line through your data, trying to follow the overall ***trend*** (that is, the pattern) as closely as possible.
4. According to your line, roughly how much is your tree growing each year — both in terms of width and in terms of cross section?
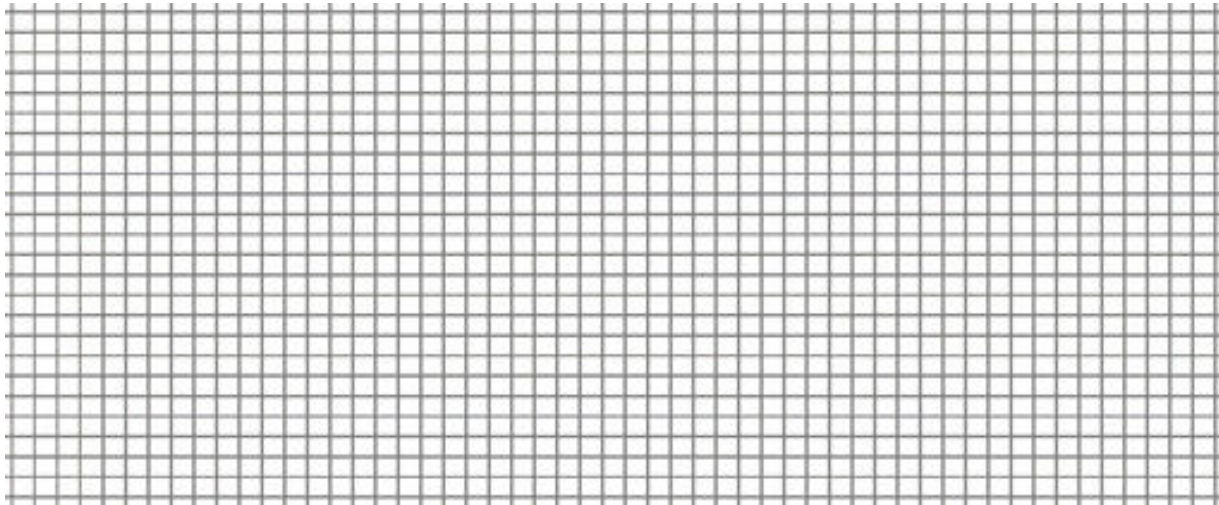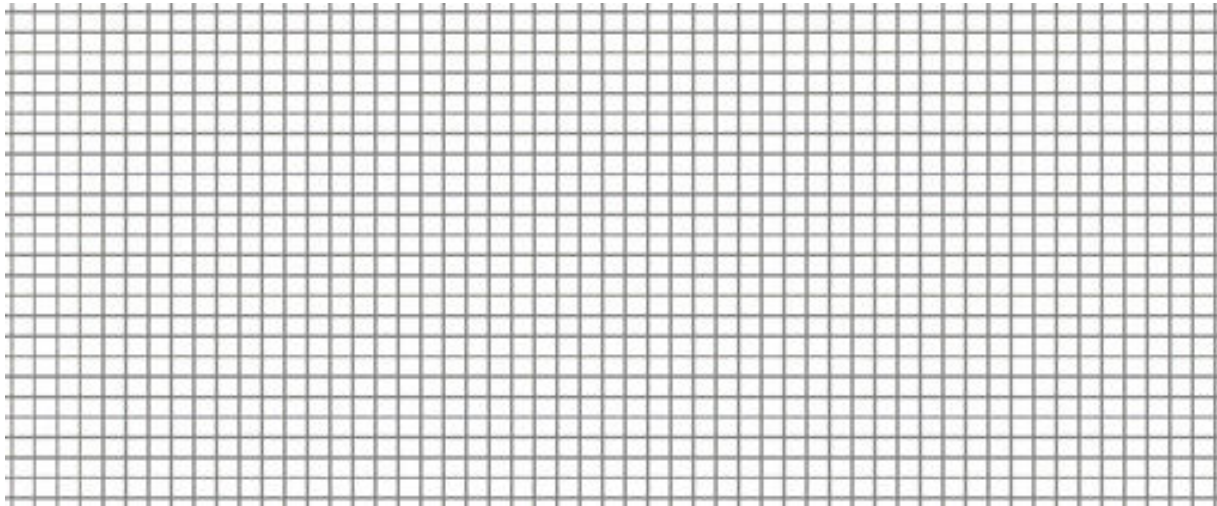
Step 3: Predicting the Future

We can use the mathematical pattern we have found to predict how a tree might grow in the future. Thinking about the future is a key part of sustainability. One way to think about the future is to use the Seventh Generation Principle:

What is The Seventh Generation Principle?

The **Seventh Generation Principle** dates back to the writing of The Great Law of Haudenosaunee Confederacy and is based on the idea that decisions we make today should result in a sustainable world seven generations into the future.

1. You've found how much this tree grows in one year. Using this number, predict how much this tree would grow in 5 years, 10 years, and 20 years.

2. Imagine you planted a tree today. How big would it be after 7 generations — that is, 175 years later?

3. Why might your answer for question 2 be wrong? That is, what other factors might change how much a tree grows?

Step 4: Presenting your work

Once you've discovered something about the land around you, it's important to share it with others. We will be making a small poster or infographic about our tree.

Please include:

- ***The type of tree your sample came from, both in English and Anishinaabemowin (hint: use the list from your teacher.)***

- ***A drawing or picture of your tree.***

- ***One of the two graphs you made in step 2.***

- ***Answers to both your focus questions.***

- ***Any other thoughts or ideas you think are important!***